

Application Number: 10/519,216  
Reply to Office Action Dated March 3, 2008

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### LISTING OF THE CLAIMS

1. (currently amended) A fibrous protein-immobilization system composition comprising:

a ~~fiber~~ nanofiber comprising fiber-forming material; ~~and~~

a protein attached to said fiber-forming material;

wherein the nanofiber includes at least one functional group suitable to permit the attachment of the protein; and wherein the at least one function group is contained within a portion of the fiber-forming material.

2. (cancelled)

3. (original) The fibrous protein-immobilization system composition, as set forth in claim 1, wherein said fiber-forming materials are linear polymers selected from the group consisting of homopolymers and copolymers of  $\alpha$ -olefins,  $\alpha,\beta$ -ethylenically unsaturated carboxylic acids, vinyl aromatics, ethyl ethers, and combinations thereof.

4. (original) The fibrous protein-immobilization system composition, as set forth in claim 1, wherein said protein is attached directly to said fiber-forming material.

5. (currently amended) The fibrous protein-immobilization system composition, as set forth in claim 4, wherein said protein includes at least one functional group that can react with ~~a corresponding function~~ the at least one functional group on said the nanofiber comprising fiber-forming material.

6. (original) The fibrous protein-immobilization system composition, as set forth in claim 1, wherein said protein is attached indirectly to said fiber-forming material by an inert coupling agent.

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7. (original) The fibrous protein-immobilization system composition, as set forth in claim 6, wherein said protein includes at least one functional group that can react with a corresponding functional group on said inert coupling agent.

8. (original) The fibrous protein-immobilization system composition, as set forth in claim 1, wherein said protein is a natural or synthetic protein.

9. (original) The fibrous protein-immobilization system composition, as set forth in claim 8, wherein said protein is selected from the group consisting of enzymes, hormones, toxins, antibodies, antigens, lectins, structural proteins, signal proteins, transport proteins, receptors, and blood factors.

10. (original) The fibrous protein-immobilization system composition, as set forth in claim 1, wherein said protein is an enzyme selected from the group consisting of chymotrypsin, cytochrome C, trypsin, subtilisin, horseradish peroxidase, soybean peroxidase, and glucose oxidase.

11. (currently amended) A method for synthesizing a fibrous protein-immobilization system comprising the steps of:

synthesizing a ~~fiber~~ nanofiber comprising a fiber-forming material, wherein the nanofiber includes at least one functional group suitable to permit the attachment of a protein and wherein the at least one function group is contained within a portion of the fiber-forming material; and

attaching a the protein to said fiber-forming material.

12. (currently amended) The method of claim 11, wherein said protein is attached to said fiber-forming material before said fiber-forming material is synthesized into a ~~fiber~~ nanofiber.

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13. (currently amended) The method of claim 11, wherein said protein is attached to said fiber-forming material after said fiber-forming material is synthesized into a fiber nanofiber.

14. (currently amended) The method of claim 11, wherein said step of synthesizing includes electrospinning a solution of said fiber-forming material to produce said fiber the nanofiber.

15. (original) The method of claim 11, wherein the step of attaching includes attaching said protein to a coupling agent and said coupling agent to said fiber-forming material.

16. (original) The method of claim 11, wherein said protein is an enzyme and further comprises the step of attaching a cofactor to said fiber-forming material.

17. (original) The method of claim 16, further comprising the step of presenting said enzyme to said cofactor by incorporating said enzyme into a fluid that contacts said cofactor.

18. (new) The fibrous protein-immobilization system composition, as set forth in claim 1, wherein the protein is contained within the fiber-forming material.

19. (new) The method of claim 11, wherein the protein is contained within the fiber-forming material.